

REMARKS

This application has been reviewed in light of the Office Action dated June 7, 2007. Claims 31-37 are presented for examination, of which Claims 31 and 34 are in independent form. Claims 31 and 34 have been amended to define still more clearly what Applicant regards as his invention. Claims 32, 33 and 35-37 have been amended as to matters of form only; no change in scope is intended or believed effected by at least these changes. Favorable reconsideration is requested.

Claims 31-37 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No.6,930,722 (Nakamura et al.) in view of U.S. Patent No. 5,892,541 (Merrill).

Applicant submits that the claims are patentable over the prior art for the reasons set forth in the previous Office Action, as well as for the reasons set forth below.

As shown above, Applicant has amended independent Claims 31 and 34 in terms that more clearly define what he regards as his invention. Applicant submits that these amended independent claims, together with the remaining claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

Claim 31 is directed to a method of driving a solid image pickup device comprising a photoelectric conversion unit, a charge-voltage conversion unit for converting electric charges from the photoelectric conversion unit into voltage signals, a signal amplification means for amplifying the voltage signals generated in the charge-voltage conversion unit, a charge transfer means for transferring photoelectric charges from the photoelectric conversion unit to the charge-voltage conversion unit, and a selecting means for reading out a signal amplified by the signal amplification means to a signal line. The method includes: (1) a first

transferring step of transferring a portion of the electric charges accumulated in the photoelectric conversion unit to the charge-voltage conversion unit while a remaining portion of the electric charges accumulated in the photoelectric conversion unit is left in the photoelectric conversion unit; (2) a first selecting step of reading out a first signal accumulated in one unit of an accumulation period to a signal line by the selecting means; (3) a reset step of resetting the charge-voltage conversion unit after the first signal is read out; (4) a second transferring step of transferring the remaining portion of the electric charges left in the photoelectric conversion unit during the first transferring step to the charge-voltage conversion unit; (5) a second selecting step of reading out a second signal accumulated in one unit of the accumulation period to the signal line by the selecting means, the second signal being a signal remaining in the first transferring step; and (6) an adding step of adding the first signal and the second signal read out to the signal line.

Among other notable features of Claim 31 are: (1) a first transferring step of transferring a portion of the electric charges accumulated in the photoelectric conversion unit to the charge-voltage conversion unit while a remaining portion of the electric charges accumulated in the photoelectric conversion unit is left in the photoelectric conversion unit; (2) a reset step of resetting the charge-voltage conversion unit after the first signal is read out; and (3) a second transferring step of transferring the remaining portion of the electric charges left in the photoelectric conversion unit during the first transferring step to the charge-voltage conversion unit. By virtue of the structure recited in Claim 31, electric charges remaining in the photoelectric conversion unit after the first transferring step are transferred in the second transferring step. Thus, electric charges can be transferred from the photoelectric conversion unit

without increasing the reset voltage.

Nakamura has been fully described in the previous Office Action and, therefore, a detailed description is not included here. As depicted in Figs. 4A-4D of Nakamura, after all of the electric charges are transferred in Fig. 4B, newly accumulated electric charges are transferred in Fig. 4D. Thus, Applicant has found nothing in Nakamura that would teach or suggest “a first transferring step of transferring a portion of the electric charges accumulated in the photoelectric conversion unit to the charge-voltage conversion unit while a remaining portion of the electric charges accumulated in the photoelectric conversion unit is left in the photoelectric conversion unit” and “a second transferring step of transferring the remaining portion of the electric charges left in the photoelectric conversion unit during said first transferring step to the charge-voltage conversion unit,” as recited in Claim 31 (emphasis added).

Further, as depicted in Fig. 4C of Nakamura, a reset is performed in a state when electric charges are present in a detection node 33, before a signal is read out to a signal line, not after performing a first transfer and reading out a signal to a signal line, as recited in Claim 31. Thus, Applicant has found nothing in Nakamura that would teach or suggest “a reset step of resetting the charge-voltage conversion unit after the first signal is read out,” as recited in Claim 31.

Even if Merrill were assumed to teach all that it is cited for, it does not remedy the deficiencies of Nakamura. Accordingly, Applicant submits that Claim 31 is patentable over Nakamura and Merrill, whether considered separately or in any permissible combination (if any).

Further, Applicants submit that it is improper to combine Nakamura with Merrill because, in Merrill, signals in different exposure periods are successively read out, and

there is no transfer switch from a photoelectric conversion unit to a detection node, as in Nakamura. In addition, in Merrill the photoelectric conversion unit is reset each time a signal is readout. That is, the signal of Merrill does not correspond to the signal of Nakamura, which is accumulated in one unit of an accumulation period. Accordingly, the image pickup device of Merrill is quite different from the image pickup device of Nakamura and the combination of the two references is, therefore, improper.

A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as a reference against Claim 31.

Independent Claim 34 is an apparatus claim corresponding to method Claim 31, and is believed to be patentable over the cited prior art for at least the same reasons as discussed above in connection with Claim 31.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the continued application.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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